REMARKS

Claims 1, 2, 5-14, 17-24, and 27-35 were pending for examination, and all have been rejected under 35 U.S.C. §§ 112 102, or 103. Claims 1, 6, 10, 11, 13, 18, 21, 22, 23, 28, and 31 are being amended. A sentence in a paragraph of the Specification is also being amended. In view of the above amendments and following remarks, withdrawal of the rejections and reconsideration of the application are respectfully requested.

EXAMINER'S INTERVIEW

Applicants very much appreciate the time and courtesy the Examiner granted for the interview on June 27, 2005 with Applicants' representing attorney, Tuan Ngo, during which various issues related to the Office Action were discussed.

AMENDMENT TO THE SPECIFICATION

Paragraph of page 14, line 17 to page 15, line 3 is being amended in which the sentence "Computer-readable media may also be coaxial cables . . . ." is being amended to recite "Transmission media may be coaxial cables . . . ."

CLAIM REJECTIONS UNDER 35 U.S.C. § 112 First Paragraph

In paragraph 3 and 4 of the above-mentioned Office Action, claims 1-2, 5, 9-10, 12-14, 17, 20, 22-24, 27, 30, and 32-35 were rejected under 35 U.S.C. § 112, first paragraph because "[t]he claim(s) contains subject matter which was not described in the specification . . . . Claim 1 recites . . . that the memory table includes entries pointing to data blocks, and that the entries are used to locate the data. The specification does not appear to describe these limitations . . . . Claims 9, 12, 13, 20, 23, 30, and 32 contain this limitation also, and claims 2, 5, 14, 17, 24, 27, and 33-35

- 14 -

incorporate this limitation by dependency. Claims 5, 17, 27, and 33-35 further recite using the physical address of the page, and converted from a virtual address, which also does not appear to be supported."

It is respectfully submitted that this application is a continuation-in-part of application number 09/896043 (Specification, page 2, lines 2-4, herein after "the parent application"). The features asserted missing are disclosed in this parent application. The memory table including entries used to locate the data is disclosed in page 12, line 12 to page 13, line 6. Using the physical address of the page and converting from a virtual address are disclosed in page 14, line 23 to page 15, line 20. A copy of the relevant paragraphs in the parent application, including pages 12-15, is attached.

In paragraphs 6 and 7, claims 1-2, 5-10, 13-14, 17-20, 23-24, 27-30, and 33-35 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 1, the Office Action indicated that the claimed feature "acquire the piece of data in the memory system" was unclear. Claim 1 is being amended to recite "acquire the piece of data from a memory subsystem."

Regarding claim 6, the Office Action indicated that it was unclear when a memory access is complete. Claims 8, 13, 18, 19, 23, 28, and 29 also contain these limitations, and claims 2, 5, 7-10, 14, 17, 19-20, 24, 27, 29-30, and 33-35 incorporate these limitations by dependency. Claim 6 is being amended to recite "determining an access time to acquire the piece of data; from the acquired access time, determining a time taken to complete the memory access; comparing the time taken to complete the memory access to a threshold."

In paragraph 8, regarding claim 1, the Office Action indicated that it was unclear what applicant intends the metes and bounds of the term "independent" to be.

Claims 10, 13, and 23 also contain this limitation, and claims 2, 5, 14, 17, 24, 27, and 33-35 incorporate this limitation by dependency. Claims having the limitations "independent of" are being amended to recite "in parallel with." Support for this feature is disclosed in the parent application, page 12, lines 3-4.

For the foregoing reasons, withdrawal of the U.S.C. § 112 rejections is respectfully solicited.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102 – Admitted Prior Art

In paragraphs 9 and 10, claims 6-7, 11, 18, 21, 28, and 31 were rejected under 35 U.S.C. § 102(a) "as being anticipated by the admitted prior art." Regarding claim 6, the Office Action, in paragraph 11, cited a paragraph in the application's Specification that recites the "process seeking the access data keeps waiting for the data until the allocated wait time runs out, at that time the process is put in the background."

Claim 6 is patentably distinguished from this cited paragraph for at least the reason that this cited paragraph does not disclose a time taken to complete the memory access or comparing the time taken to complete the memory access to a threshold. For the sake of argument that the claimed threshold corresponds to the cited allocated wait time, there is no disclosed time that corresponds to the time taken to complete the memory access. In the cited paragraph, there might be a check to determine if the allocated wait time is reached because the process in this paragraph keeps waiting for the allocated time to run out. However, there is no disclosure regarding comparing the time to complete the access time to this allocated wait time.

Amended claim 6 with its further limitation now recites "determining an access time to acquire the piece of data; from the acquired access time, determining a time taken to complete the memory access; comparing the time taken to complete the

memory access to a threshold," which is patentably distinguished from the cited

paragraph because, in this paragraph, the process keeps waiting for the data until the

allocated time runs out, but there is no disclosure regarding determining an access

time, determining a time taken to complete the memory access from the acquired

access time, and comparing the time to complete the access time to a threshold, etc.

Claims 7-10, depending directly or indirectly from claims 6, are patentable for

at least the same reasons as claim 6. Claims 7-10 are also patentable for their

additional limitations.

Claims 18 and 28 recite limitations corresponding to claim 6, and are

patentable for at least the same reasons as claim 6. Claims 19 and 20 recite

limitations corresponding to claims 8 and 9 and are therefore patentable for at least

the same reasons as claims 8 and 9. Claims 29 and 30 recite limitations

corresponding to claims 8 and 9 and are therefore patentable for at least the same

reasons as claims 8 and 9.

Regarding claim 11, the Office Action asserted that "[t]he additional limitation

of counting is taught since all time in a computer is measured using a clock, which

inherently counts as recited." It is respectfully submitted that while time may be

measured using a clock, the counted time increases as the data is being accessed, etc.,

it cannot be said that it is inherent to count time *elapsed from the time the data access

starts* because time may be counted from different reference points, e.g., from the

time the processor issues an instruction, from the time the data is received at a bus,

etc. Further, the cited paragraph does not disclose the claimed comparing the counted

time to a threshold, and, as amended claim 11 recites, this threshold is selected from

an access times of a memory subsystem. As discussed above, in the cited paragraph,

the allocated wait time may be determined so that if it runs out, then the process is put

in the background. However, there is no disclosure of comparing the counted time to

a threshold wherein this threshold is selected from an access time of a memory subsystem as in the claimed invention. For the foregoing reasons, claim 11 is patentably distinguished from the cited paragraph, and is therefore patentable.

Claim 12, depending from claim 11, is patentable for at least the same reason as claim 11. Claim 12 is also patentable for its additional limitation.

Claims 21 and 22, and 31 and 32 recite limitations corresponding to claims 11 and 12 and are patentable for the same reasons as claim 11 and 12.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102 – Horst

In paragraph 14 of page 5, claims 6-7, 11, 18, 21, 28, and 31 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. patent number 6,549,977 B1 issued to Horst et al. (hereinafter "Horst").

Regarding claim 6, Horst's cited paragraph of col. 7, line 56 to col. 8, line 18 discloses that a flush is performed whenever there is a queued write and the host has run out of commands to send to the storage controller. The host can run out of commands as a result of either the device driver reaching its maximum queue depth or a host application running out of work to do before receiving a completion interrupt. Horst's cited paragraph of col. 8, lines 35-41 discloses that a flush can be performed when read time exceeds a threshold.

However, in both cited paragraphs, there is no disclosure regarding determining an access time to acquire the piece of data; from the acquired access time, determining a time taken to complete the memory access; and comparing the time taken to complete the memory access to a threshold. The claimed comparing the time taken to complete the memory access to a threshold is patentably distinguished from Horst' comparing the read time to a threshold.

For the foregoing reasons, claim 6 is patentably distinguished from Horst and is therefore patentable.

Claims 7-10, depending directly or indirectly from claims 6, are patentable for at least the same reasons as claim 6. Claims 7-10 are also patentable for their additional limitations.

Claims 18 and 28 recite limitations corresponding to claim 6, and are patentable for at lest the same reasons as claim 6. Claims 19 and 20 recite limitations corresponding to claims 8 and 9 and are therefore patentable for at least the same reasons as claims 8 and 9. Claims 29 and 30 recite limitations corresponding to claims 8 and 9 and are therefore patentable for at least the same reasons as claims 8 and 9.

In paragraph 17 regarding claim 11, the Office Action asserted that "[t]he additional limitation of counting is taught since all time in a computer is measured using a clock, which inherently counts as recited." As discussed above, while time may be measured using a clock, the counted time increases as the data is being accessed, etc., it cannot be said that it is inherent to count time *elapsed from the time the data access starts* because time may be counted from different reference points, e.g., from the time the processor issues an instruction, from the time the data is received at a bus, etc. Further, Horst does not disclose the claimed comparing the counted time to a threshold wherein the threshold is selected from an access time of a memory subsystem.

Claim 12, depending from claim 11, is patentable for at least the same reason as claim 11. Claim 12 is also patentable for its additional limitation.

Claims 21 and 22, and 31 and 32 recite limitations corresponding to claims 11 and 12 and are patentable for the same reasons as claim 11 and 12.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103 – Admitted Prior Art/Horst and

Gurumoorthy

In paragraphs 18 and 19 of page 6, claims 1-2, 5, 9-10, 12-14, 17, 20

(mistyped as 120), 22-24, 27, 30, and 32-35 were rejected under 35 U.S.C. 103(a) as

being unpatentable over the admitted prior art (the above mentioned cited paragraph

of the application's Specification), in view of U.S. patent number 6,857,058 B1 issued

to Gurumoorthy et al. (herein after "Gurumoorthy"), or alternatively over Horst in

view of Gurumoorthy. The rejection is traversed. The Specification's cited paragraph

and Gurumoorthy, and Horst and Gurumoorthy, either alone or in combination, do not

teach every element of the claimed inventions. The alleged motivation for combining

the cited paragraph of the Specification/Horst and Gurumoorthy is improper.

Showing a prima facie case of obviousness fails.

In paragraph 20 of page 7, regarding claim 1, the Office Action asserted that

"the admitted prior art and Horst teach the invention substantially as described herein

above." The Office Action then conceded "[n]either the admitted prior art nor Horst

disclose the additional limitations of memory table with entries pointing to data used

to locate them, nor the table and memory manager working independent of [in parallel

with] an operating system and processor, nor that the table uses a physical address

converted from a virtual address of a page to convert to a location address to locate

the data. However, all of these limitations are taught in the analogous system of

Gurumoorthy."

It is respectfully submitted that neither the Specification's cited paragraph nor

Horst disclose "upon accessing the subsystems for a piece of data . . . , *determining an*

access time to acquire the piece of data from a subsystem; comparing the determined

access time to a threshold" (emphasis added). The Specification's cited paragraph

only discloses that a process seeking the access data keeps waiting for the data until the allocated wait time runs out. Horst only discloses that a flush can be performed when read time exceeds a threshold. The claimed comparing the determined access time to a threshold is patentably distinguished from waiting until the allocated wait time runs out or when read time exceeds a threshold because the claimed invention first determines the access time, then compares this determined access time to a threshold, which is not disclosed in the cited paragraphs.

Gurumoorthy's cited paragraph of col. 1, lines 7-21 discloses the increasing demand for graphics and full-motion video applications. Gurumoorthy's cited paragraph of col. 2, lines 5-15 discloses memory system's organization into pages. Gurumoorthy's cited paragraph of col. 5, lines 1-15 discloses the page numbers and page sizes. Gurumoorthy's cited paragraph of col. 3, lines 62-67 discloses the software for filing and maintaining the GART can be implemented by a different type of software module which can reside other than in the operating system and be executed by an execution unit (not shown) other than system processors 1, 2.

As can be seen, Gurumoorthy does not cure the missing elements in the Specification's cited paragraph and Horst. That is, Gurumoorthy does not disclose "upon accessing the subsystems for a piece of data . . . , determining an access time to acquire the piece of data from a subsystem; comparing the determined access time to a threshold," etc. Gurumoorthy does not disclose that, while the first process for which a piece of data is access is being executed, the memory table working with a memory manager managing the data blocks in parallel with an operating system and a processor. For the sake of argument that even if the software for filing and maintaining the GART in Gurumoorthy corresponds to the claimed memory manager, there is no disclosure that this software managing the data blocks in parallel with an operating system and a processor while the first process is being executed. The fact

that this software can be implemented by a different type of software module which can reside other than in the operating system and be executed by an execution unit other than system processor is not parallel to the claimed feature that, while the first process is being executed, the memory manager managing the data blocks in parallel with an operating system and a processor.

The Office Action asserted that "[a]n artisan would have desired these elements in order to gain the ability to achieve high performance when encountering disparate page sizes in the other systems. Thus it would have been obvious ... to add these elements to the admitted prior art or Horst, because as taught by Gurumoorthy they provided better performance when faced with disparate page sizes." This assertion is conclusory without providing supporting evidence. There is no teaching or suggestion in either the Specification's cited paragraph, Horst, or Gurumoorthy to combine the teachings. It is not of common knowledge to combine the teachings, either. Therefore, showing a prima facie case of obviousness fails.

For the foregoing reasons, claim 1 is patentably distinguished from the Specification's cited paragraph, Horst, Gurumoorthy, either alone or in combination.

Claims 2, 5, and 33, depending directly or indirectly from claim 1, are patentable for at least the same reasons as claim 1. Claims 2, 5, and 33 are also patentable for their additional limitations. For example, regarding claim 2 neither the Specification's cited paragraph, Horst, nor Gurumoorthy discloses that the data block contain the accessed piece of data is placed in the memory system based on a movement pattern of data in the data block. The Office Action failed to provide evidence supporting the assertion that it is inherent that the data block is placed in the memory system based on a structure of the memory system. Regarding claim 5, neither the Specification's cited paragraph, Horst, nor Gurumoorthy discloses that the memory table using a physical address of a memory page corresponding to the piece

of data to convert to a location address corresponding to an entry pointing to the location of the piece of data. Regarding claim 33, neither the Specification's cited paragraph, Horst, nor Gurumoorthy discloses that the physical address of the memory page is converted from a virtual address of the piece of data.

Claims 13, 14, 17, and 34, and 23, 24, 27, and 35 recite limitations corresponding to claim 1, 2, 5, and 33, and are patentable for the same reasons as claims 1, 2, 5, and 33.

In paragraphs 22 and 23 of the Office Action, claims 8, 19, and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (the Specification's cited paragraph), or alternatively over Horst.
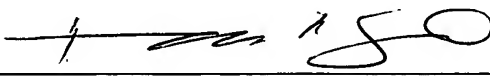
In paragraph 23 of page 8, the Office Action asserted that "one of ordinary skill in the art would have recognized that there were only two choices, either the manager must supply the time of its own accord, or it must be asked for it (equal to polling it). The first choice may reduce bus traffic since polling may take numerous iterations until the desired time is reached. The second choice may simplify manager circuitry since for the manager to supply the time itself requires determination of how to control the sending of the time (how often, at what interval, or at what time). Thus it would have been obvious . . . to poll the manager for the time, because this was known to simplify the circuitry of the manager as compared to alternative means." This assertion is improper because the Office Action, in rejecting a claim, cannot use its own knowledge or understanding of the subject matter, but must provide supporting evidence. In this regard, the Office Action failed to do so.

SUMMARY

In conclusion, claims presented for examination clearly present subject matter that is patentable over the prior art of record, and therefore withdrawal of the rejections and issuance of the application is respectfully requested.

Respectfully submitted,

Date: 7/7/05   By:

Tuan V. Ngo, Reg. No. 44,259
IP Administration
Legal Department, M/S 35
Hewlett-Packard Company
P. O. Box 272400
Fort Collins, CO 80527-2400
Phone (408) 447-8133
Fax (408) 447-0854